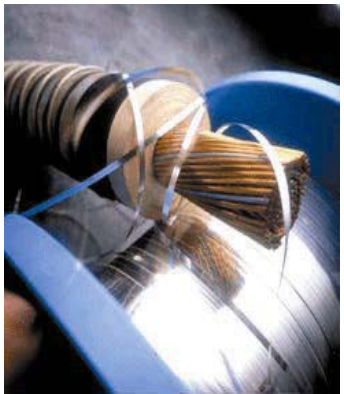
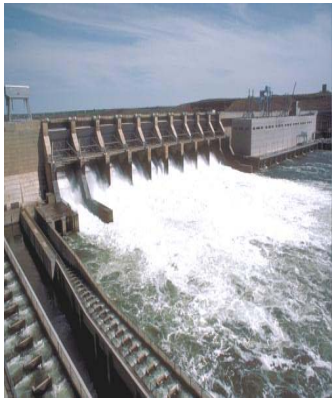
Federal Energy Management Advisory Committee Meeting

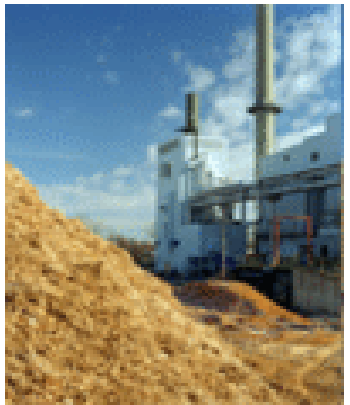
Opportunities to Transfer New and Emerging Technologies to the Federal Sector

Robert Dixon
Deputy Assistant Secretary
Office of Power Technologies, U.S. Department of Energy

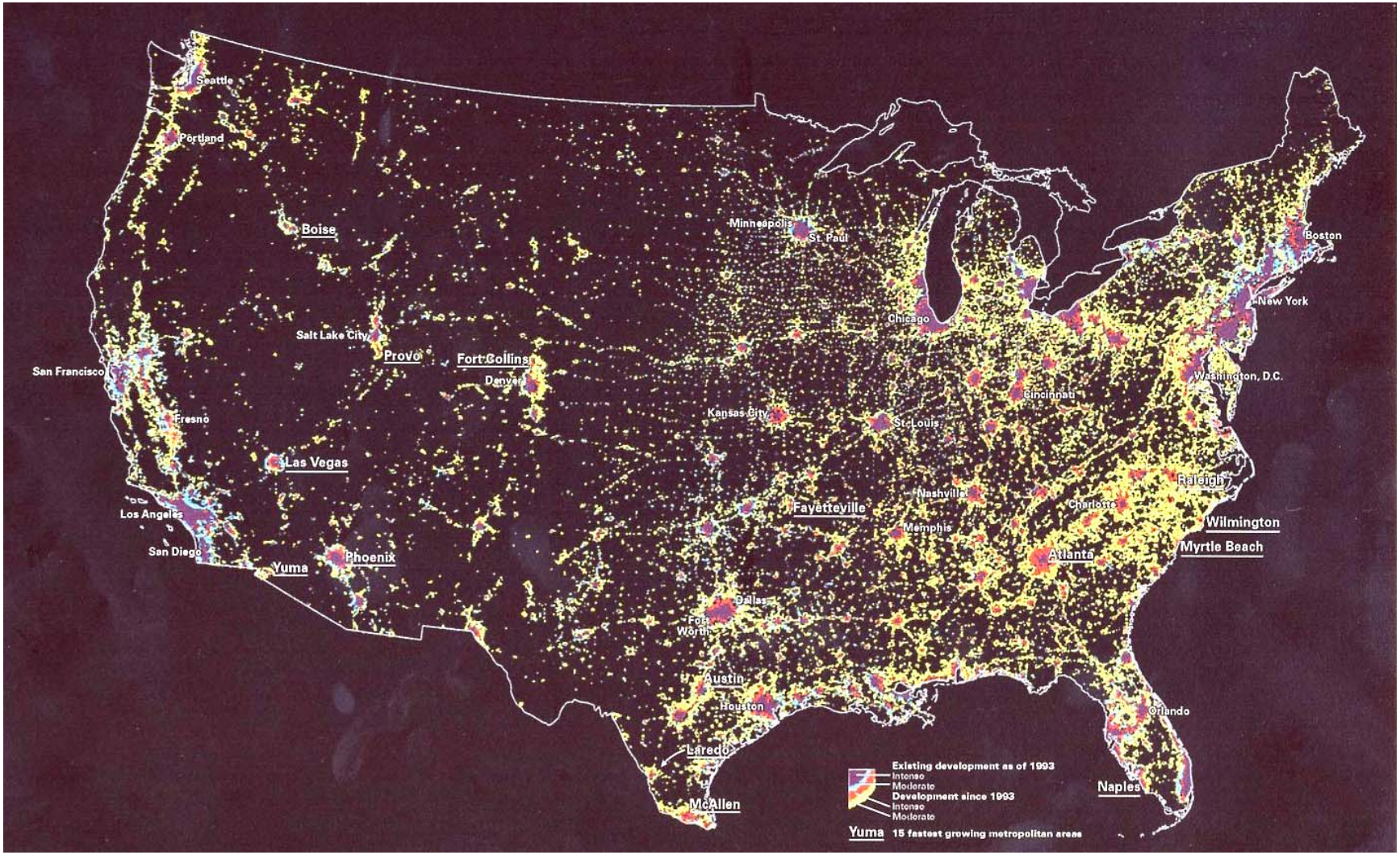
November 14, 2001
Washington, DC







Electric Power Needs



Source: National Geographic

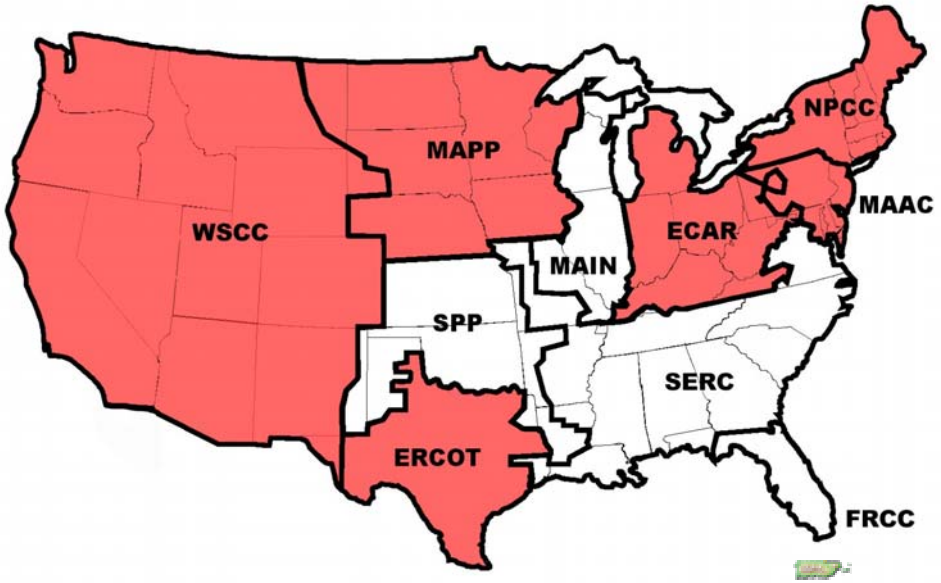
The World Has Changed…

Distributed Power Units Lower Manhattan, September 2001

Electric Power Constraints

"If the energy infrastructure of this country is inadequate or in some way excessively costly, it will undermine economic growth, and is therefore a major issue that must be addressed." ***Alan Greenspan***, *January 26, 2001*

2009 Projections

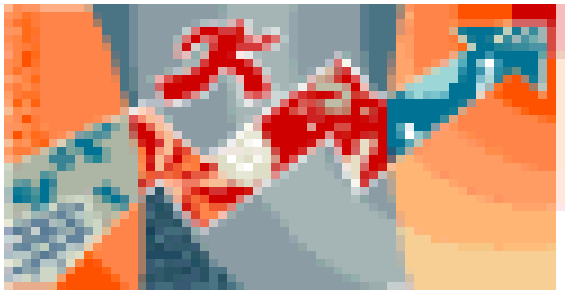


Areas with Capacity Margins < 10 percent

Source: North American Electricity Reliability Council, 2000

"The Transition"

In the delivery of electric power…



Yesterday

The Analog Age

- "3 nines"
- Electro-mechanical devices
- Central power business model – "one size fits all"

Today

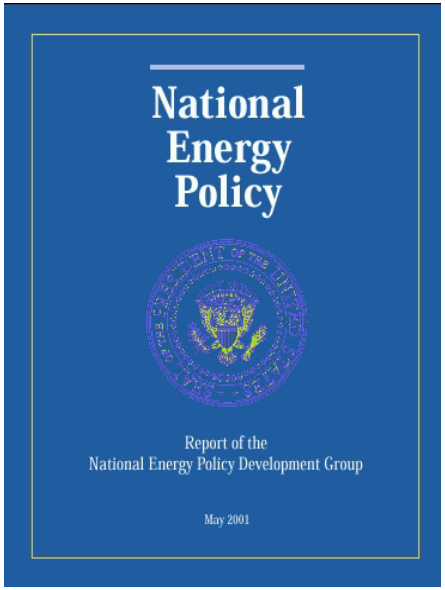
The Digital Age

- "6 nines"
- Online, inter-connected, integrated
- Distributed energy model – customized solutions

National Energy Policy

Of the 105 total recommendations…

- 21 affect distributed energy
- 17 affect renewable energy
- 13 affect T&D
- 8 affect international activities



Portfolio of Technologies

Solar Buildings

Energy Storage

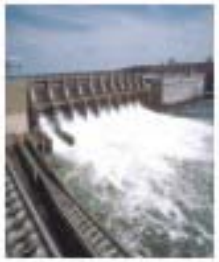
Advanced Turbines

Photovoltaics

Microturbines

Thermally Activated

Hydrogen



Hydropower

Superconducting Cable

Biomass

Combined Heat and Power

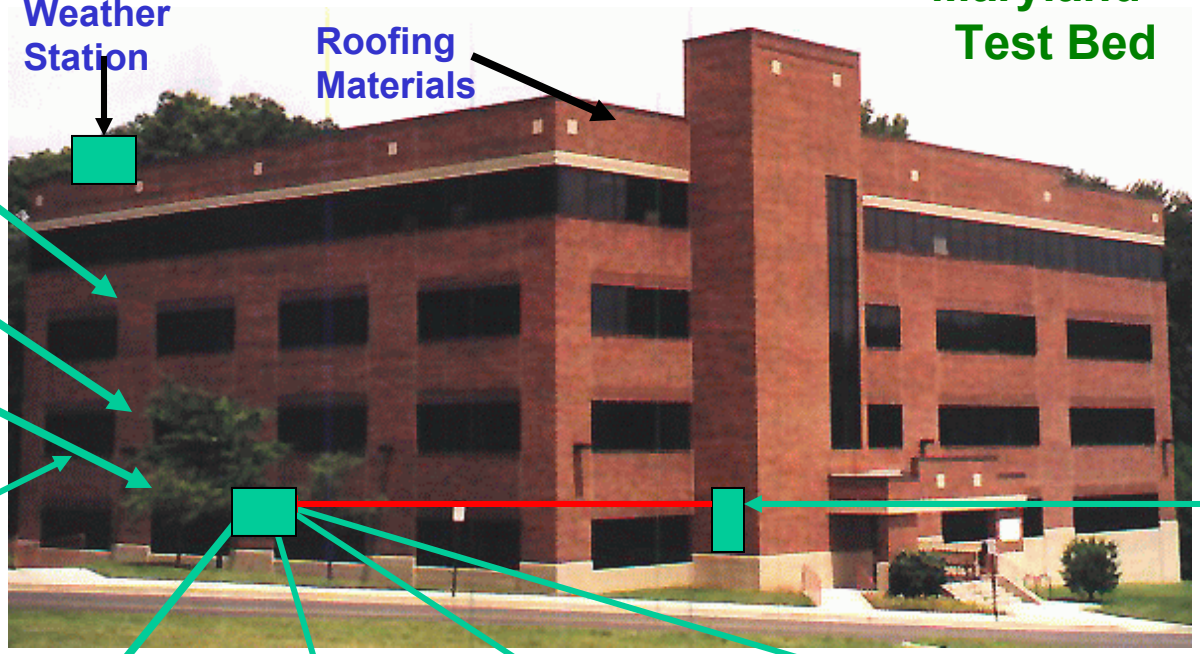
Wind

T&D

Geothermal

Buildings CHP

University of Maryland – Test Bed



Windows Thermal Pane

Weather Station

Roofing Materials

Advanced Building Materials, Insulation

Foundation

Ventilation
-Ducts
-Piping
-Fans
-Blowers

Low Voltage Grid

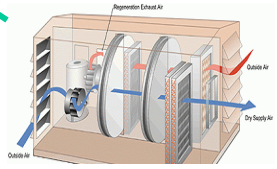
Controls DG

Instrumentation

Humidity Control

Power

Heating/Cooling



Indoor Air Quality

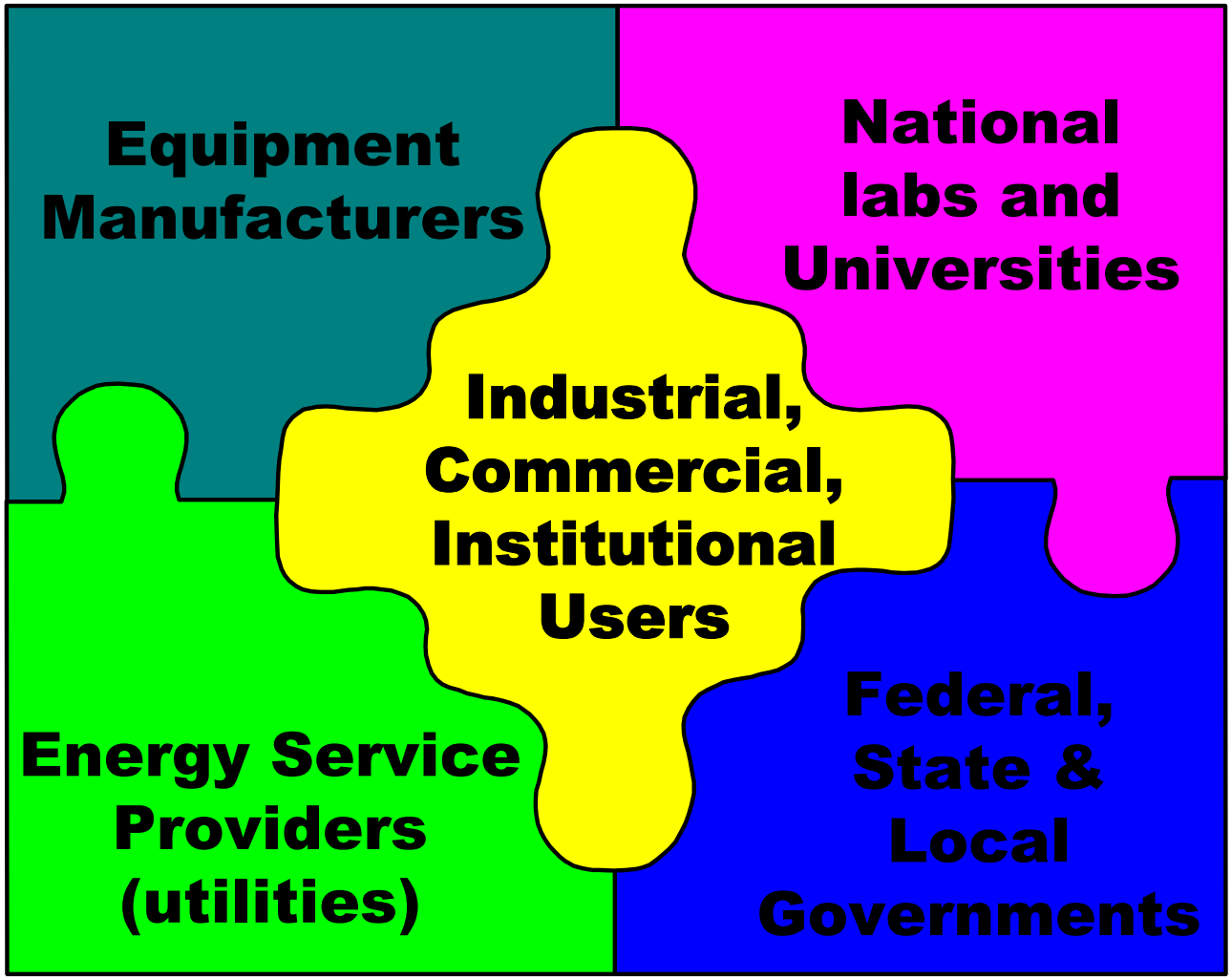
Storage

Reject

Zero *Net* Energy Buildings

- Optimum integration of EE & RE technologies
- Less vulnerable to power disruption
- Zero annual need for off-site energy

R&D Partnerships – A Key to Success



Near Term Challenges

- Get more installations on the ground ASAP
- Expand acceptance in the Federal sector
- Publicize success stories

Working Together

- www.eren.doe.gov/power
- Technical publications
- Workshops and conferences
- Technology planning
- Cost-shared RD&D

Information Clearinghouse and Networking